

The Mountain.TRIP project team on its way to the workshop in Innsbruck, May 2010. © Claudia Drexler

tain.TRIP collaborators have developed a categorization of the projects' outcomes, indicating whether a project produces a scientific or management tool, policy recommendations, or background knowledge. Every partner contributes to the extraction of key messages as two collaborators might not find the same points to be relevant for practitioners. By comparing and discussing the results we can improve the key message extraction. Only then can we begin with the "translation" of the results.

Developing products. Within mountain.TRIP, MRI is responsible for product development. We will take the projects' outcomes and give them forms that facilitate understanding by practitioners. Prototype products could be a video on the relationship between agricultural practices and carbon sequestration, a brochure with policy recommendations to support the marketing of quality mountain products, or a teaching tool on the reaction of various tree species to climate change, to name but a few examples. The prototypes will be tested and assessed by the practitioners. Mountain.TRIP's choice of products will finally depend on their responses.

There is a lot to do and the wires between the six partners will not be idle for another one and a half years. If, after that, we have been able to raise the awareness of the necessity to make research results available to practitioners as a part of projects themselves, then one important goal will have been reached. We are aiming at going one step further, showing a way of transforming research into practice that others can follow.

Author

Claudia Drexler, product development, Mountain.TRIP

Further information

Mountain.TRIP is funded under the 7th Framework Programme of the EU and runs from December 2009 to the end of 2011.

Milestones of the project will be the practitioners' workshops in Brussels in October 2010, and then in Romania, Austria, Poland and Spain in May and June 2011.

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http://www.mountaintrip.eu

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Landscape dynamics in Sagarmatha (Mount Everest) National Park, Nepal:

Impacts on selected environmental services and adaptive capacities. A Ph.D. project.

Rodney Garrard

My central research theme is to examine the ongoing landscape transformation in Sagarmatha National Park (SNP), and assess the impacts of such change on selected environmental services.

Through this research I intend to provide insight into the underlying drivers of land use and cover change and what this means for the sustainability of the region. In addition, I will also utilise the research findings to generate a portfolio of adaptation strategies, specific to SNP, capable of informing affected stakeholders of the scenarios for different management trajectories (see figure 1).

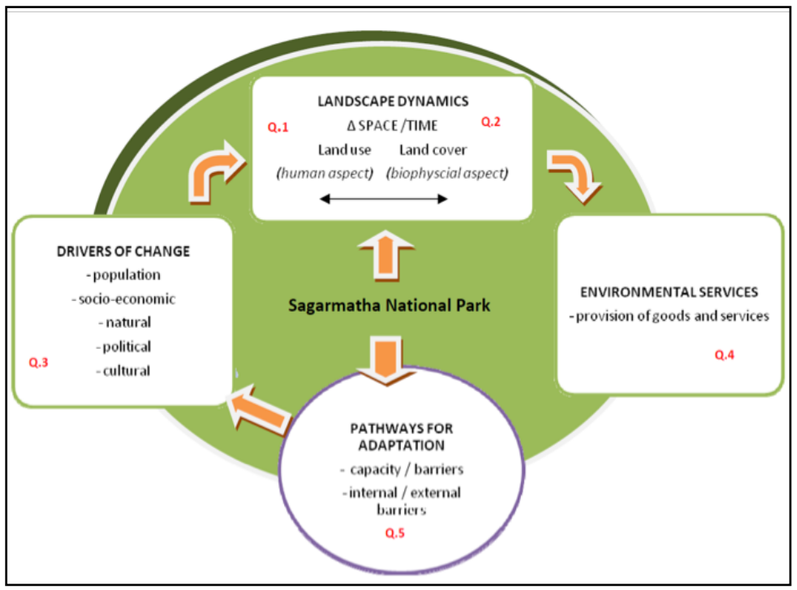

Figure 1: Relationships between the different elements in the proposed project.

Land use and cover change is one of the most important forms of environmental change occurring in many of the world's mountain regions (Körner and Ohsawa, 2005). Recent small-scale analyses highlight the current landscape dynamics in the Himalayas (e.g., overexploitation, fragmentation and degradation – Chaudhary et al., 2007). These ongoing, and in many cases, rapid transformations affect the ability of mountain ecosystems, particularly their vegetation, to provide many different environmental goods and services, which, in turn, affects human well-being. Among the services affected are biodiversity, water provision, food production and, in terms of intensive climate change mitigation debates, also carbon sequestration (Chan et al., 2006). Despite the vital importance of these services, little information is available regarding the extent and the impacts of changes in land use and cover on mountain ecosystems at the localised level. Acknowledging that it is exactly at the local level where insights can facilitate a greater understanding of different processes influencing the overall dynamics of landscape change, there is an urgent need to fill this gap between decisions and available knowledge to support evidence-based decision making at the localised level.

The proposed research project takes a multi-step approach. For the purposes of this research note I highlight the overall approach and questions sought:

- Step 1: Provide a quantitative and spatially explicit picture of the extent and dynamics of land use/cover change in SNP over the past 50 years. What are the current systems of land use in SNP and how have these systems evolved over time? And, what is the state of land cover in the park and how has the spatial and temporal distribution evolved overtime (50 years approx).
- Step 2: Identify the critical drivers (external and internal) of landscape change at the local level, and assess distinguishable clusters of human-environmental interactions, which represent problem or opportunity contexts or syndromes. What are the critical developments at present, and can the effects of change over time be quantified? How to identify the local effects of vulnerable and sustainable coupled human-environment components to interacting perturbations, including climate change?
- Step 3: What are the environmental services (and associated economic and social benefits) delivered by or directly linked to land use/cover systems in SNP at different spatial and temporal scales, and what are their interdependencies? Who are the stakeholders or stakeholder groups interested in, and benefiting from these

environmental services? How is the provision of selected environmental services affected by the changes in landscape dynamics?

- Step 4: What are the possible scenarios of the availability of selected environmental services? Can distinguishable patterns of problems as well as opportunity contexts or syndromes of socio-economic or political decision-making variables be distinguished, and spatially related to the use of environmental services? Which stakeholders (groups) would win or lose under different scenarios?

> *"It is critical to embed a stakeholder dialogue in such a research agenda, and thereby create a process of mutual learning and knowledge exchange."*

The main scientific contribution of this research project lies in the development of a methodology to link land use and cover data in a spatially explicit manner, and in quantifying selected environmental services (and their stakeholders) at the local level in space as well as time. By shedding light on the different dimensions of landscape dynamics it is expected to provide insights into the underlying drivers and processes, and identify tipping points beyond which the resilience of certain environmental systems is lost (e.g., their drivers, source, duration, impacts and interactions). Given the limited knowledge and experience of such research projects in mountain regions at high-resolution scales, it is critical to embed a stakeholder dialogue in such a research agenda, and thereby create a process of mutual learning and knowledge exchange with realities on the ground.

This research project is under the supervision of Prof. Urs Wiesmann, Centre for Development and Environment (CDE), Prof. Martin Price, Centre of Mountain Studies, U.K, Dr. Thomas Kohler (CDE) and Dr. Alton Byres, The Mountain Institute, USA. In addition, the research project has institutional support from the International Centre for Integrated Mountain Development (ICIMOD) in Nepal. This research project also links with the Global Alpine Conservation Partnership (ACP) thereby adding to the existing case studies of Mountain Protected Areas, describing commonalities, uniqueness, and lessons that can be transferred as part of the ACP, which is crucial for achieving long-term sustainability of such regions.

Rodney Garrard consulting with the Chair of the Khumbu Alpine Conservation Committee, Ang Nime Sherpa, explaining the kerosene depot scheme in Dingboche. © Kerstin Garrard, October 2009.

Author on location consulting his LRMP map of Sagarmatha region. © Kerstin Garrard, October 2009.

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References

Chan, M, K., Shaw, M. R., Cameron, D. R., Underwood, E, C., Daily, G, C., Conservation planning for ecosystem services. (2006) Public Library of Science Biology, Vol. 4, No. 11. e379.

Chaudhary, R. P., Aase, T.H., Vetaas, O.R and Subbedi, B.P, (2007) (Editors), Local effects of Global Changes in the Himalayas: Manang, Nepal. Tribhuvan University, Nepal and University of Bergen, Norway.

Körner, C. and M. Ohsawa (Coordinating Lead Authors) (2005), Mountain systems. Chapter 24 In R. Hassan et al. (eds.) Ecosystems and Human Well-being: Current State and Trends, Volume 1, Island Press, Washington DC: pp 681-716

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